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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/058,662	01/28/2002	Ryoichi Mukai	2500.66134	3822

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EXAMINER	
PIZIALI, ANDREW T	

ART UNIT	PAPER NUMBER
1771	

DATE MAILED: 08/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/058,662	MUKAI, RYOICHI	
	Examiner	Art Unit	
	Andrew T. Piziali	1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,19 and 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,19 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *5/26/05 & 1/28/02* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed on 6/26/2006 has been entered. The examiner has withdrawn the objection of claim 2 based on the amendment to claim 1. Applicant's amendment necessitated the new grounds of rejection presented in this Office action.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 19 and 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

Claim 19 states that each of the crystal grains contact each other at grain boundaries, but the specification does not mention crystal grains contacting each other at grain boundaries. The Figures also fail to show this claimed limitation. Although Figures 2, 10 and 11 illustrate grain areas (29) as perfectly shaped rectangles due to perfectly straight grain boundaries (31), the figures and/or specification do not teach or suggest that the grains grow in perfect rectangular form around the nucleation site (27). The Figures merely illustrate the approximate area within which the grains partially occupy. It is also noted that page 12, line 30 to page 13 line 2 of the current specification fails to mention the crystal grains contacting one another.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 19 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear if the "said crystal grains" refers to the crystal grains of the seed crystal layer and/or the crystal grains of the magnetic crystal layer.

Claim Rejections - 35 USC § 102/103

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-4, 6 and 19-20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over USPN 5,846,648 to Chen et al. (hereinafter referred to as Chen).

Regarding claims 1-4, 6 and 19-20, Chen discloses a polycrystalline structure film comprising metallic islands (74) formed on a surface of a substrate (12), a seed crystal layer (24) containing crystal grains (76) having grown from a corresponding one of the metallic islands,

and a magnetic crystal layer (16) containing magnetic crystal grains (78), each of the magnetic crystal grains having grown from a corresponding one of the crystal grains of the seed crystal layer (see entire document including Figure 2, column 8, lines 15-48, column 9, lines 14-65, column 10, lines 7-39, column 11, lines 11-22, the paragraph bridging columns 11 and 12, and column 16, lines 9-46).

Figure 2 of Chen does not appear to illustrate the islands (74) as being physically spaced from each other, but Chen specifically discloses that the islands (also known as the nucleation sites, see column 17, lines 57-60) are to be spaced to provide a method for optimizing the segregation of segregant material at the grain boundaries in the magnetic layer (column 8, lines 39-48 and column 18, lines 7-16). In addition, Chen discloses that an oxide or nitride metallic compound (segregant) may be present between the islands thereby physically separating the islands (column 18, lines 60-67). Therefore, Chen discloses metallic islands (74) physically spaced from each other so as to expose a metallic compound (segregant).

In the event that it is shown that Chen does not disclose the claimed physically spaced islands with sufficient specificity, the invention is obvious because Chen discloses that it is understood by one of ordinary skill in the art that the spacing determines properties such as high coercivity, high squareness, low noise, proper segregation spacing, and improved overwrite (column 2, lines 24-31, column 8, lines 15-48, column 9, lines 14-26, column 12, lines 29-41, and column 16, lines 9-46). It would have been obvious to one having ordinary skill in the art at the time the invention was made to physically space the islands, because the spacing determines properties such as high coercivity, high squareness, low noise, proper segregation spacing, and

improved overwrite, and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claims 2-4, Chen discloses that the islands may include an oxide or nitride metallic compound (column 18, lines 60-67).

Regarding claim 4, Chen does not appear to specifically mention the islands including silicon nitride, silicon oxide, or aluminum oxide, but Chen does disclose that the islands may comprise titanium oxide or nitride segregant material (column 18, lines 60-67). Considering that Chen discloses that silicon nitride, silicon oxide, aluminum oxide, titanium oxide, and titanium nitride are all suitable segregant materials (column 11, lines 57-62), it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the segregant of the seed layer from any suitable segregant material, such as silicon nitride, silicon oxide, or aluminum oxide, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability and desired characteristics.

Regarding claim 6, Chen discloses that the islands may include an oxide or nitride segregant metallic compound (column 18, lines 60-67), but Chen does not appear to mention the atomic percent of segregant material. Considering that Chen discloses that segregant may be present in an amount of about or below 10 molar percent in the magnetic crystal layer (column 12, lines 12-28), and considering that the spacing of the islands dictates the spacing between the grains in the magnetic crystal layer, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use about or below 10 molar percent segregant in the islands, motivated by a desire to properly space the magnetic crystal grains.

Regarding claims 19 and 20, considering that the islands taught by Chen are physically separated by the metallic compound as taught by the current specification, the metallic compound can be considered to exist along the grain boundaries as a wall.

Claim Rejections - 35 USC § 103

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,846,648 to Chen as applied to claims 1-4, 6 and 19-20 above, and further in view of USPN 6,150,015 to Bertero et al. (hereinafter referred to as Bertero).

Chen does not appear to specifically mention the metallic islands (nucleation sites) including platinum atoms, but Chen discloses that the nucleation sites may be formed of any material that allows for the epitaxial growth of the Co-based recording layer (column 11, lines 10-22). Bertero discloses that the most ideal material choice for a nucleation layer is the same composition used for the magnetic layer (column 13, lines 40-42). Considering that Chen discloses that the magnetic layer may comprise a platinum atoms (column 15, lines 5-10), it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the islands with the same composition used for the magnetic layer, because Bertero discloses that this material is ideal for epitaxial growth of the magnetic layer and because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability.

Response to Arguments

10. Applicant's arguments have been considered but are mostly moot in view of the new grounds of rejection.

The applicant asserts that Chen does not disclose separation to islands formed on the substrate. The examiner respectfully disagrees. Figure 2 of Chen does not appear to illustrate the islands (74) as being physically spaced from each other, but Chen specifically discloses that the islands (also known as the nucleation sites, see column 17, lines 57-60) are to be spaced to provide a method for optimizing the segregation of segregant material at the grain boundaries in the magnetic layer (column 8, lines 39-48 and column 18, lines 7-16). In addition, Chen discloses that an oxide or nitride metallic compound (segregant) may be present between the islands thereby physically separating the islands (column 18, lines 60-67). Therefore, Chen discloses metallic islands (74) physically spaced from each other so as to expose a metallic compound (segregant).

In the event that it is shown that Chen does not disclose the claimed physically spaced islands with sufficient specificity, the invention is obvious because Chen discloses that it is understood by one of ordinary skill in the art that the spacing determines properties such as high coercivity, high squareness, low noise, proper segregation spacing, and improved overwrite (column 2, lines 24-31, column 8, lines 15-48, column 9, lines 14-26, column 12, lines 29-41, and column 16, lines 9-46). It would have been obvious to one having ordinary skill in the art at the time the invention was made to physically space the islands, because the spacing determines properties such as high coercivity, high squareness, low noise, proper segregation spacing, and

improved overwrite, and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Conclusion

11. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T. Piziali whose telephone number is (571) 272-1541. The examiner can normally be reached on Monday-Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

8/9/06

atp

ANDREW T. PIZIALI
PATENT EXAMINER